

Catalogue of Hymenopterous Insects collected by Mr. A. R. WALLACE at the Islands of Aru and Key. By FREDERICK SMITH, Esq., Assistant in the Zoological Department, British Museum. Communicated by W. W. SAUNDERS, Esq., F.R.S., V.P.L.S.

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THIS Collection of Hymenoptera is the most important contribution which has been made to the Aculeata through the exertions of Mr. Wallace; in point of geographical distribution, it adds much to our knowledge. In the Aru, Key, and neighbouring islands, we meet with the extreme range of the Australian insect-fauna; and as might be expected, it is found amongst the Vespidous Group, and in one or two instances in the Formicidæ. The latter, being frequently conveyed from one island to another, can perhaps scarcely be considered indicative of natural geographical distribution. Of the forty-six species of the Formicidous Group, only six were previously known to science. Of the genus *Podomyrma* here established, one species only, from Adelaide, was previously known; it is one of the most distinct and remarkable genera in the family. The *Pompilidæ* are species of great beauty, some closely resembling those of Australia in the banding and maculation of their wings; amongst the *Vespidæ* will be found some of the most elegant and beautiful forms in the whole of that protean family of Hymenoptera.

Fam. ANDRENIDÆ.

Gen. PROSOPIS.

1. *PROSOPIS MALACHISIS*. *P. nigro-ceruleo-viridis, nitida et delicatè punctata; alis hyalinis.*

Female. Length $4\frac{1}{2}$ lines. Deep blue-green. with tints of purple in certain lights, particularly on the head, the clypeus with a central longitudinal ridge, its anterior margin slightly emarginate; the flagellum rufo-piceous beneath, the ocelli white. Thorax: the wings hyaline and brilliantly iridescent; the legs dark rufo-piceous with a bright purple tinge. Abdomen delicately punctured, the head and thorax more strongly so; the latter with a semicircular enclosed space at its base, which is smooth and shining.

Hab. Key Island.

Gen. NOMIA.

1. *NOMIA CINCTA*. *N. nigra, capite thoraceque punctatis, pedibus ferrugineis; segmentis abdominis apice fulvo-testaceo late fasciatis.*
- Female*. Length 5 lines. Black: the two basal joints of the flagellum,

the apical margin of the clypeus, the labrum, mandibles, and legs ferruginous; the wings fulvo-hyaline, the nervures ferruginous, the tegulæ more or less rufo-testaceous; the sides of the metathorax with tufts of pale fulvous pubescence and the floccus on the posterior femora of the same colour, the tibiæ and tarsi with short ferruginous pubescence. Abdomen shining, the apical margins of the segments broadly fulvo-testaceous, very bright, having a golden lustre.

Hab. Key Island.

2. *NOMIA LONGICORNIS*. *N. nigra, lucida et delicatulè punctata, facie pube brevi griseâ tectâ, femorum posticorum flocco pallido, tibiis externè fusco-pubescentibus; maris antennis, capite thoraceque longioribus.*

Male. Length 4 lines. Brassy, with tints of green on the clypeus, metathorax, and thorax beneath; the head and thorax very closely and finely punctured; the clypeus produced and highly polished; the mandibles rufo-testaceous, the antennæ as long as the head and thorax. Thorax: the wings hyaline and splendidly iridescent, the tegulæ and the tarsi rufo-testaceous. Abdomen closely punctured, the apical margins of the segments smooth and shining; the head and thorax above with a pale fulvous pubescence, that on the sides of the metathorax and legs pale and glittering; the abdomen has a pale scattered glittering pubescence.

Hab. Aru.

3. *NOMIA DENTATA*. *N. nigra et punctata, facie metathoracisque lateribus cinereo-pubescentibus, postscutello medio unidentato. Mas. antennis filiformibus longitudine thoracis.*

Female. Length 5 lines. Black; head and thorax rather finely punctured; the face covered with short cinereous pubescence; the clypeus naked and much produced, the anterior margin and the tips of the mandibles ferruginous; the cheek with long whitish pubescence. Thorax: the sides of the metathorax, the floccus on the posterior femora and the postscutellum with whitish pubescence, the latter produced in the middle into a blunt tooth; the legs fusco-ferruginous, with the anterior tibiæ and apical joints of the tarsi brighter; wings hyaline and iridescent. Abdomen shining and punctured, the apical margins of the two basal segments broadly depressed, and more finely and closely punctured than the rest; the apical margins of the second, third, and fourth segments pale testaceous; the apical margins of the two basal segments narrowly fringed with white pubescence, usually more or less interrupted in the middle.

Male. Resembles the female very closely, but has the face much more pubescent; the antennæ filiform and longer than the head and thorax; the scutellum armed at its posterior lateral angles with an acute tooth; the metathorax truncate and slightly concave, its base with short longitudinal grooves, the lateral margins fringed with long pubescence.

Hab. Aru.

Subfam. DASYGASTRÆ.

Gen. MEGACHILE, *Latr.*

1. MEGACHILE LATERITIA. *M. nigra*, abdomine pube ferrugineâ vestito, alis fuscis.

Female. Length 8 lines. Black; head and thorax very closely and finely punctured; the mandibles with a single blunt tooth at their apex; the anterior margin of the clypeus transverse. Thorax: the wings brown, the posterior pair palest, their base subhyaline. Abdomen clothed with bright brick-red pubescence above and beneath; the basal segment with bright yellow pubescence above.

Hab. Aru.

2. MEGACHILE SCABROSA. *M. nigra*, metathorace anticè rudè scabrato, abdomine subtùs nigro-pubescente.

Female. Length $5\frac{1}{2}$ lines. Black; the clypeus, mesothorax anteriorly, and the posterior tibiæ outside coarsely rugose, the roughness on the thorax consisting of transverse little elevated points; the face with a thin griseous pubescence; the anterior margin of the clypeus fringed with fulvous hairs; the cheeks have a long pale fulvous pubescence. Thorax: the wings hyaline, the nervures black. Abdomen smooth and shining, with black pubescence beneath; beneath, the apical margins of the segments with a fringe of very short white pubescence.

Hab. Aru.

3. MEGACHILE INSULARIS. *M. nigra*, nitida, delicatè punctata, facie pube pallidè fulvâ vestitâ, abdomine subtùs pube lætè ferrugineâ vestito, alis hyalinis.

Female. Length $5\frac{1}{2}$ lines. Black; the head and thorax finely and closely punctured, the abdomen delicately so; the face clothed with pale fulvous pubescence, the mandibles with two blunt teeth at their apex; the clypeus shining and strongly punctured. Thorax: the wings subhyaline with a slight cloud at their apex; the basal joint of the posterior tarsi with a dense dark ferruginous pubescence within. Abdomen: the four basal segments with transverse impressed lines in the middle; beneath, clothed with bright ferruginous pubescence; the abdomen has an obscure æneous tinge above.

Hab. Aru.

Gen. CROCISA, *Jurine.*

1. Crocisa nitidula, *Fabr. Syst. Piez.* p. 386. 2.

Hab. Aru; Key Island; Australia; Amboyna.

Gen. ALLODAPE, *St.-Farg.*

1. ALLODAPE NITIDA. *A. nitida nigra*, clypeo flavo, alis hyalinis, abdomine ad apicem punctato.

Female. Length 3 lines. Black and shining; the clypeus yellow, pro-

duced in front; the sides of the face depressed; the ocelli prominent and reddish. Thorax very smooth and shining; the wings colourless and iridescent, their extreme base yellowish, the nervures and stigma brown, the tegulæ pale testaceous-yellow; the posterior tibiæ with a scopa of glittering white hairs, the tarsi ferruginous and with glittering hairs. Abdomen, from the third segment to the apex, gradually more and more strongly and closely punctured.

Hab. Aru.

Gen. XYLOCOPA, *Latr.*

1. *Xylocopa æstuans*, *Linn. Syst. Nat.* i. p. 961. 53 ♀; *St.-Farg. Hym.* ii. p. 193. 36 ♂ ♀.

Hab. Aru; India; Singapore; Celebes.

Gen. SAROPODA, *Latr.*

1. *Saropoda bombiformis*, *Smith, Cat. Hym. Ins.* pt. 2. p. 318. 6.

Hab. Aru; Australia (Richmond River).

Gen. ANTHOPHORA, *Latr.*

1. *Anthophora zonata*, *Linn. Syst. Nat.*

Hab. Aru Island; Celebes; Ceylon; India; Borneo; Hong-Kong; Shanghai; Philippine Islands.

2. *ANTHOPHORA ELEGANS*. *A. nigra*, pube capitis thoracisque nigrâ, abdomine fasciis quatuor lætè cæruleis ornato; tibiis posticis ferrugineo-pubescentibus.

Female. Length 6 lines. Black; the labrum, a narrow line down the middle and another on each side of the clypeus, a minute spot above it, and the scape in front testaceous yellow, the base of the mandibles of a paler colour; the flagellum fulvous beneath. Thorax: the pubescence black; wings subhyaline, the nervures dark rufous, tegulæ obscurely testaceous. Abdomen with four fasciæ of brilliant blue, which is changeable, with pearly tints in different lights; the posterior tibiæ densely clothed outside with fulvo-ferruginous pubescence; the pubescence inside is black.

Hab. Key Island.

Gen. TRIGONA, *Jurine.*

1. *Trigona læviceps*, *Smith, Cat. Hym. Ins., Journ. Proc. Linn. Soc.* ii. p. 51. 8.

Hab. Aru; Singapore; India.

Fam. FORMICIDÆ.

Gen. FORMICA.

1. *Formica virescens*, *Fabr. Ent. Syst.* ii. p. 355. 23 ♂ ♀ ♀.—*Lasius virescens*, *Fabr. Syst. Piez.* p. 417. 8.

2. *Formica gracilipes*, *Smith, Cat. Hym. Ins., Journ. Proc. Linn. Soc. ii.* p. 55. 13 ♂.

3. *FORMICA FRAGILIS*. *F. pallidè testacea, elongata et gracilis, capite posticè angustato; thorace medio compresso, pedibus elongatis; squamâ incrassatâ triangulatâ.*

Worker. Length $3\frac{1}{2}$ lines. Pale rufo-testaceous, smooth and slightly shining; antennæ elongate, longer than the body, the flagellum slender and filiform, the scape nearly as long as the head and thorax; head oblong, narrowed behind the eyes into a kind of neck, the sides parallel before the eyes, which are black and round, the clypeus slightly emarginate anteriorly, the mandibles finely serrated on their inner margin and terminating in a bent acute tooth. Thorax elongate, narrowest in the middle, the prothorax forming a neck anteriorly; legs elongate and very slender. Abdomen ovate, the node of the petiole incrassate, and viewed sideways is triangular or wedge-shaped.

Hab. Aru.

This is one of those remarkable forms which recede so greatly from the normal type of *Formica* as apparently to indicate a generic distinction; but in those exotic species of which we have obtained all the forms, we find many which approach closely to the present insect, which is probably only the small worker of some already described species. No one would venture, without the authority of the personal observation of some competent naturalist, to unite all the forms of any exotic species of *Formica*.

4. *FORMICA FLAVITARSUS*. *F. nigra, elongata et gracilis; thorace posticè compresso, pedibus elongatis, tarsis flavis.*

Worker. Length 4 lines. Black and sub-opaque; head elongate, narrowed behind, the clypeus truncate anteriorly, the mandibles pale ferruginous; antennæ elongate and slender, the flagellum filiform and pale rufo-testaceous; the thorax and legs elongate, the latter slender with their tarsi pale rufo-testaceous. Abdomen ovate, the scale of the petiole incrassate and slightly notched above.

Hab. Aru.

5. *FORMICA COXALIS*. *F. nigra, nitida; flagello, coxis et abdomine subtùs pallidè testaceis.*

Worker major. Length 5 lines. Black and very delicately roughened with a fine transverse waved striation only perceptible under a good magnifying power. Head large, much wider than the thorax, oblong-ovate with a deep emargination behind; the clypeus slightly produced and truncate anteriorly, the angles of the truncation rounded, and with a central shining carina; the flagellum, except the tarsal joint, pale rufo-testaceous. Thorax elongate, compressed behind, the coxæ pale rufo-testaceous. Abdomen ovate, the scale of the petiole incrassate, somewhat wedge-shaped when viewed sideways, the abdomen sparingly sprinkled with long pale hairs.

6. *FORMICA CORDATA*. *F. pallidè rufa*; abdomine fusco, capite cordato.

Worker. Length 2 lines. Pale rufo-testaceous; the head heart-shaped; the eyes black, the flagellum fusco-ferruginous with the basal joints pale; the mandibles ferruginous. Thorax narrow, deeply strangled at the base of the metathorax. Abdomen more or less fuscous, the node of the petiole narrow and pointed above; the entire insect is smooth and shining.

Hab. Aru.

The *worker minor* is rather smaller and has the abdomen darker, in all the specimens received, but in other respects agrees with the above.

7. *FORMICA OCULATA*. *F. pallidè ferruginea*; capite oblongo, oculis magnis, thorace compresso.

Worker. Length $2\frac{1}{2}$ lines. Pale ferruginous, with the vertex and apex of the abdomen black; the head oblong, the sides nearly parallel, with the anterior margin truncate; the mandibles with fine acute teeth on their inner margin; the antennæ inserted wide apart about the middle of the head; the eyes very large and ovate, placed backwards on the sides of the head, reaching to the posterior margin of the vertex, forming as it were its posterior lateral angles. The thorax narrow and compressed behind; abdomen ovate, entirely smooth and shining.

Hab. Aru.

8. *FORMICA MUTILATA*. *F. nigra*; capite oblongo, truncato anticè et sanguineo, antennis tarsisque rufo-testaceis.

Worker. Length $2\frac{1}{2}$ lines. Black and shining; the head truncate anteriorly, the antennæ inserted wide apart, about the middle, the face blood-red before their insertion and deeply striated longitudinally, behind the antennæ the head is black, smooth, and shining; the eyes ovate and placed backwards on the sides of the head. Thorax rounded in front and strangled between the meso- and metathorax, the latter obliquely truncate; legs rather short and stout, the femora compressed, the anterior pair broadly dilated, the base and apex of the femora, the tibiæ, and tarsi rufo-testaceous, the tibiæ with a darker stain behind. Abdomen oblong-ovate, the apical margins of the segments narrowly pale testaceous; the scale of the petiole compressed, with its superior margin rounded.

Hab. Aru.

This is a very singular insect in many respects, and closely resembles in form the *Formica truncata* of Spinola.

9. *FORMICA QUADRICEPS*. *F. nigra, nitida*; capite anticè obliquè truncato, thorace posticè compresso.

Worker. Length $3\frac{1}{2}$ lines. Shining black; head oblong-quadrate, slightly narrowed anteriorly, with the sides nearly straight, the posterior angles rounded, and very slightly emarginate behind; the head obliquely truncate from the base of the clypeus; the truncation as

well as the mandibles obscurely ferruginous; the apex of the flagellum and the apical joints of the tarsi pale rufo-testaceous. Thorax rounded anteriorly, compressed behind, with the metathorax abruptly truncate. The scale of the petiole narrow, incrassate, its anterior margin slightly curved, its posterior margin straight; the abdomen ovate.

Worker minor. About 3 lines long, very like the larger *worker*, the head being truncate in front; but it is, in proportion to the thorax, narrower; the latter is compressed and abruptly truncate; in other respects it agrees with the *worker major*.

Hab. Aru.

10. *FORMICA LÆVISSIMA.* *F. nigra nitida lævissima*, sparsè pilosa; squamâ oblongâ subdepressâ.

Worker. Length 4 lines. Jet-black, very smooth and shining; head wider than the thorax, slightly emarginate behind, the sides slightly rounded; the anterior margin of the clypeus rounded, the mandibles striated and obscurely ferruginous; the scape with a few glittering silvery-white hairs. Thorax not quite so wide as the head anteriorly, narrowed behind, with the disk somewhat flattened, slightly convex, a deep strangulation between the meso- and metathorax, the latter obliquely rounded; the legs and abdomen sprinkled with glittering white hairs. The node of the petiole incrassate, very slightly elevated; viewed sideways, broadly wedge-shaped; the abdomen ovate.

Hab. Aru.

11. *FORMICA NITIDA.* *F. capite abdomineque nigris*, antennis thoraceque pedibusque rufo-testaceis lævissimis et lucidis.

Worker. Length 4 lines. Head and abdomen shining black; the flagellum, thorax, legs, and scale of the petiole rufo-testaceous; the legs palest; the scape fuscous, with its base pale; the head large, wider than the abdomen, and emarginate behind; the clypeus and mandibles obscurely ferruginous. Thorax compressed, not strangulated in the middle. The scale of the petiole narrow, with its margin rounded above; abdomen ovate, and sprinkled with a few erect pale hairs.

Hab. Aru.

12. *FORMICA SCRUTATOR.* *F. nigerrima*, mandibulis tarsorumque articulo apicali pallidè ferrugineis, thorace medio profundè coarctato.

Worker. Length $1\frac{1}{2}$ –2 lines. Shining black; the mandibles pale, ferruginous, with their inner margins finely denticulate; the eyes placed rather forwards on the sides of the head, the latter emarginate behind. Thorax deeply strangulated in the middle; the metathorax elevated and obliquely truncate behind. Abdomen ovate; the scale of the petiole sub-incrassate, with its margin rounded above; the insect very thinly covered with a fine cinereous pile.

Hab. Aru.

13. *FORMICA ANGULATA*. *F. nigra nitida*; flagello capite anticè pedibusque obscurè ferrugineis, metathorace angulato.

Worker. Length 3 lines. Shining black; head of moderate size; the clypeus and mandibles obscure ferruginous; the flagellum fusco-ferruginous, with the tip pale testaceous. Thorax rounded anteriorly and compressed behind; the scutellum prominent, forming a small tubercle; the metathorax obliquely truncate, the margin of the truncation elevated, so that when viewed sideways the metathorax forms an obtuse angular shape. Abdomen ovate, the node of the peduncle elevated, incrassate, rounded anteriorly, and flat behind.

Hab. Aru.

Gen. *POLYRHACHIS*, *Smith*.

1. *Formica sericata*, *Guér. Voy. Coq. Zool.* ii. 203; *Atlas Ins.* pl. 8. f. 2, 2 a, b, c, d, ♀. (*Polyrhachis sericata*, *Smith, Append. Cat. Form.* p. 200.)

Hab. Aru; New Hebrides.

2. *Formica sexspinoso*, *Latr. Hist. Nat. Fourm.* p. 126, pl. iv. f. 21 ♂. (*Polyrhachis sexspinoso*, *Smith, Cat. Form.* p. 56. 3.)

Hab. Aru; India; Philippine Islands.

3. *POLYRHACHIS MARGINATUS*. *P. niger*; antennis, palpis pedibusque ferrugineis; thoracis marginibus recurvis, metathorace petiolique squamulâ bidentatis.

Worker. Length $2\frac{1}{2}$ lines. Black; the antennæ and legs ferruginous; the head and thorax rugose; the prothorax transverse, its anterior margin slightly curved, with the lateral angles produced forwards and very acute; the thorax narrowed to the metathorax, which is armed with two divergent acute spines. Abdomen velvety black and globose; the scale of the petiole produced laterally into long, bent, acute spines, which curve backwards to the shape of the abdomen.

Hab. Aru.

4. *POLYRHACHIS HOSTILIS*. *P. niger*, longitudinaliter striatus, thoracis marginibus expansis, metathorace squamulâque petioli spinis duabus crassis acutis curvatis.

Worker. Length 3 lines. Black; the head and thorax longitudinally striated, the abdomen very finely and evenly so; the prothorax transverse, wider than the head, the anterior and lateral margins recurved, the latter acute at their anterior angles, and rounded at the posterior ones; the lateral margins of the mesothorax recurved, a deep notch between the meso- and metathorax; the latter with a long, stout, curved, acute spine on each side. The scale of the petiole produced above on each side, into a long, curved, stout, acute spine, which curves backwards round the sides of the abdomen.

Hab. Aru.

5. *POLYRHACHIS LONGIPES*. *P. niger*; flagelli dimidio apicali tibisque anticis pallidè ferrugineis, prothorace petiolique squamulâ bidentatis.

Worker. Length 3 lines. Black; the head and thorax finely rugose; the antennæ elongate, longer than the insect; the apical half of the flagellum pale ferruginous. Thorax rounded above, the sides not margined; two spines on the thorax anteriorly, two on the metathorax, and two on the scale of the petiole; the legs elongate, with the anterior tibiæ ferruginous. Abdomen globose, sometimes rufous, or the base obscurely rufous.

Hab. Aru.

6. *POLYRHACHIS SERRATUS*. *P. niger*; capite thoraceque rugosis, abdomine densè punctato, squamâ petioli transversâ, margine superno serratâ.

Worker. Length 2 lines. Black, with the antennæ and legs ferruginous. Thorax oblong-quadrate or very slightly narrowed towards the metathorax, slightly convex above, not margined at the sides, the divisions not perceptible; the head and thorax rugose and pubescent. Abdomen globose, shining, and closely punctured; the scale of the petiole transverse above, produced into an acute spine on each side, the upper margin finely serrated, the lateral margins narrowed to their base, and having two or three small sharp spines.

Hab. Aru.

7. *POLYRHACHIS SCUTULATUS*. *P. niger*, fortiter politus et lucidus, metathorace petiolique squamulâ dente longo curvato acuto in latere utroque, pedibus nigro-ferrugineis.

Worker. Length $2\frac{1}{2}$ lines. Black and very smooth and shining; the legs dark ferruginous. Thorax: the disk expanded, slightly convex above, with the margins acute and curving upwards; the anterior margin transverse, rather wider than the head, with the lateral angles slightly curved forwards, and very acute; the lateral margins of the prothorax curved backwards and inwards; the margins of the mesothorax are rounded; the pro- and mesothorax highly polished above, forming an escutcheon-shaped disk; the metathorax opaque, and sprinkled with a few short glittering hairs, armed posteriorly with two long very acute spines, divergent and directed backwards. Abdomen globose; the scale of the petiole with two long curved acute spines, directed backwards to the curve of the abdomen.

Hab. Aru.

8. *POLYRHACHIS MUCRONATUS*. *P. lævis*, nitidus, niger; thorace spinis duabus crassis compressis acutis posticè armato.

Worker. Length $2\frac{1}{2}$ lines. Black, smooth, and shining, very delicately and indistinctly aciculate; the antennæ beneath and the tibiæ and femora obscurely ferruginous, the anterior and intermediate tibiæ brightest; the apex of the mandibles ferruginous. Thorax transverse

in front, or very slightly curved, with the lateral angles acute; the thorax is rounded above, and not margined at the sides; the metathorax armed with two long, stout, acute compressed spines; the spines divergent, as well as two on the scale of the petiole, which are long and very acute. Abdomen globose.

Hab. Aru.

9. *POLYRHACHIS GEOMETRICUS*. *P. niger*; antennarum apice, tibiis tarsorumque apice ferrugineis, thorace circulariter striato.

Worker. Length 2 lines. Black; the apical joints of the flagellum, the anterior legs, the anterior and intermediate tibiae, and the apical joints of the tarsi pale ferruginous; the extreme base of the anterior tarsi black. Thorax rounded above, not margined, gradually narrowed posteriorly; the prothorax of the same width as the head, its lateral angles toothed; the disk with a circular striation. Abdomen globose and pubescent; the scale of the petiole compressed, its superior margin rounded, and with four minute teeth.

Hab. Aru.

10. *POLYRHACHIS IRRITABILIS*. *P. niger*, pube pallidè aureâ vestitus; thorace quadridentato, petioli squamulâ bidentatâ.

Female. Length $6\frac{1}{2}$ lines. Black, and densely clothed with short pale golden pubescence; all parts of the insect sprinkled with erect cinereous hairs; the mandibles shining black, the palpi pale testaceous; the head elongate, the eyes placed high on the sides of the head, ferruginous and very prominent. Thorax elongate-ovate; the prothorax with a short, stout, acute tooth on each side, slightly curved and directed forwards; the metathorax with a similar tooth on each side directed backwards; the wings subhyaline, the nervures fuscous; the legs fusco-ferruginous, the femora and coxæ brightest. Abdomen ovate; the scale incrassate, armed above with two stout acute teeth.

Hab. Aru.

This is probably the female of *P. sexspinosus*.

11. *POLYRHACHIS LÆVISSIMUS*. *P. niger*, lævis nitidusque; metathorace hispinoso, petioli squamulâ quadrispinosâ, pedibus ferrugineis.

Worker. Length $2\frac{3}{4}$ lines. Black, very smooth and shining; the legs ferruginous, with the coxæ, articulations, and the tarsi black. The thorax not flattened above, or margined at the sides; the division between the pro- and mesothorax distinct, that between the meso- and metathorax not discernible, the latter with two erect acute spines; the scale of the petiole with four short acute spines. Abdomen globose.

Hab. Aru.

This species is very like *P. mucronatus*; on close examination, however, it is seen to be very distinct: it may be at once distinguished by its larger head, which is wider than the thorax, rounded behind the eyes, and widely emarginate behind.

12. *POLYRHACHIS BELlicosus*. *P.* capite abdomineque nigris, thorace femoribusque rufis, thorace quadrispinoso, petioli squamulâ bihamatâ.

Worker. Length $3\frac{1}{2}$ lines. Black, with the scale of the petiole, thorax, coxæ, and femora blood-red. Thorax: the lateral margins raised above, with two slightly curved divergent spines in front, and two stout, acute, long curved spines in the middle, directed backwards; the scale of the petiole forming a long erect pedestal, which terminates above in two much bent acute hooks, directed backwards, and being as high as the basal segment of the abdomen; the spines and hooks black at the apex. Abdomen ovate.

Hab. Aru.

13. *POLYRHACHIS HECTOR*. *P.* niger et vestitus pube pallidè aureâ; prothorace petiolique squamulâ bispinosis, pedibus ferrugineis.

Worker. Length 3 lines. Black; the apex of the scape and the legs ferruginous; the extreme base of the tibiæ and the tarsi black; a stout acute spine on each side of the prothorax, directed forwards; the thorax flattened above, its lateral margins raised; the divisions of the segments very distinctly impressed; the pale golden pubescence on the abdomen thinner than on the head and thorax. The scale of the petiole angled at the sides towards its summit, the angles dentate, the upper margin straight, and at each lateral angle an acute spine, directed backwards, and curved to the shape of the abdomen; the spines parallel.

Hab. Aru.

14. *POLYRHACHIS RUFOFEMORATUS*. *P.* niger, lævis, nitidus; femoribus abdominisque squamulâ ferrugineis.

Worker. Length $3\frac{1}{2}$ lines. Black; head oblong; the eyes placed high at the sides near the vertex, the front very prominent, with two elevated carinæ in the middle, at the outside of which the antennæ are inserted. Thorax: the divisions strongly marked, flattened above with the sides elevated; the prothorax with an acute spine on each side anteriorly; the coxæ and femora ferruginous, with the apex of the latter more or less fuscous. Abdomen: the base and the scale ferruginous, the latter angled at the sides and emarginate above.

Hab. Aru.

Gen. *PONERA*, Latr.

1. *Ponera rugosa*, Smith, *Cat. Hym. Ins. Proc. Linn. Soc.* ii. 66. 5.

Hab. Aru. Borneo.

2. *PONERA SCULPTURATA*. *P.* nitida nigra; capite, thorace abdominisque segmentis primo et secundo profundè striatis, nodo spinis duabus acutis armato; pedibus abdomineque apice ferrugineis.

Worker. Length 5 lines. Black and shiny, the legs obscurely ferru-

ginous as well as the mandibles; the head strongly and evenly striated longitudinally. The prothorax with a circular striation above; behind, the thorax is compressed, the sides being obliquely striated, the striæ uniting and crossing the central ridge of the thorax. The node of the petiole and basal segment of the abdomen with a curved striation, the second segment longitudinally striated and depressed at its base, which is smooth and shining; the basal half of the third segment is longitudinally striated.

Hab. Aru.

This species is at first sight very like the *P. geometrica* from Singapore; but the striation of the abdomen alone will serve to distinguish it.

3. *PONERA PARALLELA*. *P. nigra*, opaca; antennis, mandibulis, pedibus abdominisque apice ferrugineis.

Worker. Length $3\frac{1}{2}$ lines. Opake black; the antennæ thick and scarcely as long as the thorax, their apex and the mandibles bright ferruginous; the legs somewhat obscure ferruginous, with the articulations much brighter; the head a little wider than the thorax and subovate; the thorax, node of the petiole, and the abdomen of nearly equal width, the abdomen being slightly the widest; the node of the petiole nearly quadrate; the apical margin of the first segment and base of the second slightly depressed.

Hab. Aru.

4. *PONERA QUADRIDENTATA*. *P. atro-fusca*; antennis, facie anticè, antennis, mandibulis, tibiis tarsisque ferrugineis; alis subhyalinis.

Female. Length $3\frac{1}{2}$ lines. Nigro-fuscous; the antennæ with a carina between their base, the face anteriorly, the mandibles, the legs, and the abdomen at its apex and beneath, ferruginous; the femora and coxæ above, fuscous; the head subquadrate with the angles rounded; the eyes small and placed forwards on the sides of the head towards the base of the mandibles, the latter with four strong teeth on their inner margin. Thorax oblong-ovate with the metathorax truncate; the wings fusco-hyaline, the stigma large and black. Abdomen: the second segment slightly narrowed at its base, the node of the petiole incrassate and compressed, its upper margin rounded. The insect entirely covered with a short downy cinereous pile, the abdomen having also a number of scattered erect glittering hairs.

Hab. Aru.

Gen. *ECTATOMMA*, *Smith*.

1. *ECTATOMMA RUGOSA*. *E. fusco-brunnea*; capite, thorace, nodoque rugosis; abdomine delicatulè aciculato.

Worker. Length 4 lines. Obscure fusco-ferruginous, the antennæ and legs bright ferruginous; the head, thorax, and node of the petiole coarsely rugose; the eyes very prominent and glassy; the mandibles

longitudinally but very delicately striated, their inner margin edentate; the thorax slightly narrowed behind. Abdomen very delicately aciculate.

Male. Length $3\frac{1}{2}$ lines. Of the same colour, and sculptured like the worker; the head rounded behind the eyes and narrowed before them; the eyes very large, prominent and ovate; the ocelli very bright and prominent; antennæ elongate and slender, the scape short, not longer than the second joint of the flagellum. Thorax: the scutellum prominent, forming a rounded tubercle, the metathorax elongate and oblique. Abdomen aciculate as in the worker, but much more deeply strangulated between the first and second segments; the petiole rugose and clavate.

Hab. Aru.

Gen. ODONTOMACHUS, Latr.

1. *Odontomachus simillimus*, Smith, *Cat. Form.* p. 80. 11 ♀.

Hab. Aru. Ceylon.

2. *ODONTOMACHUS TYRANNICUS.* *O. capite thoraceque nigris, antennis abdomineque ferrugineis, margine interno mandibulorum serratulo.*

Worker. Length 7 lines. Head oblong, narrowed behind, posteriorly deeply emarginate; the mandibles rufo-piceous, brightest at their apex, which is armed with two long teeth which are bent abruptly inwards, their tips black; the anterior portion of the head striated obliquely from the centre; the head, behind the anterior sulcation, very smooth and shining and having a deep longitudinal central depression. Thorax transversely striated, the articulations of the legs and the tarsi ferruginous. Abdomen smooth, shining, and ferruginous; the node of the petiole incrassate, cylindric, and tapering upwards into a very acute spine.

Hab. Aru.

3. *ODONTOMACHUS MALIGNUS.* *O. ferrugineus; capite supra oblique striato; margine interno mandibulorum confertim serrato; metathorace transversim striato; squamâ unispinosâ; abdomine lævissimo.*

Worker. Length 7 lines. Ferruginous; the flagellum and legs palest; head much narrowed behind, the posterior margin deeply emarginate; mandibles smooth and shining, their inner margin strongly serrated, their apex abruptly bent or elbowed, and armed with two stout teeth; the face anteriorly evenly striated obliquely; the head behind the anterior sulcation very delicately striated obliquely. The prothorax smooth and shining, the meso- and metathorax transversely striated. Abdomen very smooth and shining; the node of the petiole incrassate and tapering upwards into an acute spine.

Hab. Aru.

This species most closely resembles *O. maxillaris* from Brazil; but its

smooth polished prothorax alone would distinguish it; its head is much broader anteriorly, and less elongate.

Gen. PSEUDOMYRMA, Guér.

1. PSEUDOMYRMA LÆVICEPS. *P. nigra*, lævis et nitida; antennis, mandibulis, tibiis anterioribus, tarsisque rufo-fulvis.

Worker. Length $2\frac{1}{2}$ lines. Black and shining; head very smooth and slightly emarginate behind, the eyes large and ovate; the mandibles and antennæ rufo-fulvous. Thorax with the sides flattened, the disk slightly convex; a deep strangulation between the meso- and meta-thorax, the latter rounded above and oblique behind; the trochanters, articulations of the legs, and the tarsi rufo-fulvous. Abdomen thinly covered with a fine cinereous pile; the first node of the petiole somewhat oblong-ovate, the second subglobose, the petiole of the first node short.

Hab. Aru.

Gen. PODOMYRMA, Smith.

Head oblong in the *female*, rather wider than the thorax; in the *worker* subovate and much wider; *eyes* small, ovate and placed about the middle at the sides of the head; *antennæ* geniculated, the scape about two thirds of the length of the flagellum which is clavate, the club three-jointed; the *mandibles* stout and dentate; the *labial palpi* 3-jointed; the *maxillary palpi* 4-jointed. *Thorax*, oblong-ovate in the *female*, in the *worker* transverse in front and narrowed behind with the metathorax bidentate; the anterior wings with one elongate marginal cell and two submarginal cells, the second extending to the apex of the wing; the legs stout, the femora incrassate; abdomen ovate, the peduncle with two nodes.

The insects included in this genus are undoubtedly most nearly allied to those belonging to the genus *Myrmecina*; but, excepting that they agree in having the same number of joints in the palpi, they have little resemblance to each other. With the exception of the genus *Myrmecia*, these are the largest insects in the subfamily Myrmicidæ; and all the species are distinguished by their remarkably thickened femora and margined thorax: we are unacquainted with the males.

1. PODOMYRMA FEMORATA. *P. ferruginea*; capite oblongo, obliquè striato, thorace abdomineque lævibus nitidis; alis subhyalinis fusconebulosis; femoribus valdè incrassatis, basi tenuissimis, femoribus posticis infra compressis.

Female. Length 8 lines. Rufo-testaceous; the mandibles and anterior margin of the face black, the inner margin of the mandibles rufo-piceous and armed with six short stout teeth, the apical tooth largest. The head oblong, slightly narrowed posteriorly and emarginate be-

hind, longitudinally striated, the striae diverging from the centre at the anterior ocellus; at half the distance between the posterior ocelli and the margin of the vertex the striae are transverse. Thorax smooth and shining, with scattered fulvous hairs; the wings fusco-hyaline, with a dark fuscous stain occupying the marginal cell and traversing the course of all the nervures; the legs with the femora much incrassated, the posterior pair compressed beneath into a flattened process or keel. Abdomen ovate, smooth, shining, and with a scattered fulvous pubescence; the first node of the petiole rounded in front, narrowed and truncate behind, with a large compressed tooth beneath; the second node subglobose.

Worker major. Length 4 lines. Ferruginous, entirely smooth and shining; the thorax, legs, and abdomen more or less obscure, the femora being usually rufo-piceous; the mandibles striated with their margins black. Thorax nearly flat above, very slightly convex with the sides margined, the anterior margin slightly rounded, the lateral angles produced into small acute spines; a deep strangulation at the base of the metathorax, a little before which the lateral margins are produced into an angular tooth, the metathorax with two short acute spines; the femora thickly incrassate. Abdomen ovate.

Hab. Aru.

2. *PODOMYRMA STRIATA.* *P. ferruginea*; capite thoraceque longitudinaliter striatis, femoribus valde incrassatis, basi tenuissimis.

Worker. Length 3 lines. Rufo-ferruginous with the abdomen obscure, becoming blackish at the apex, the head coarsely striated, with a central portion from the insertion of the antennae to the hinder margin of the vertex delicately so; the mandibles striated, with the teeth on their inner margin black. Thorax rugose-striate, the anterior lateral angles dentate, the metathorax without spines; the femora thickly incrassate and greatly attenuated at their base. Abdomen ovate, smooth and shining; the nodes of the petiole rugose.

Hab. Aru.

This species resembles *P. femorata*, but is easily distinguished by its striated head and thorax; the latter is similarly flattened above and margined at the sides; the femora are also thickened precisely as in that species.

3. *PODOMYRMA LÆVIFRONS.* *P. obscurè ferruginea*; capite abdomineque lævissimis lucidisque; thorace longitudinaliter striato; femoribus medio valde incrassatis, basi tenuissimis.

Worker. Length $2\frac{1}{2}$ lines. Head and abdomen smooth, shining black, in some examples fusco-ferruginous; the antennae, legs, and thorax ferruginous, the latter longitudinally striated; the thorax margined at the sides, the disk slightly convex, the anterior margin slightly rounded, with the lateral angles armed with short acute spines, the

thorax deeply strangled posteriorly, the metathorax not spined; the femora thickly swollen in the middle and very slender at their base and apex. Abdomen ovate, the first node of the petiole oblong, the second globose.

Hab. Aru.

There is considerable variation in intensity of colouring in examples of this species, the thorax and legs being sometimes pale ferruginous; in the specimen described they are dark; every shade of gradation occurs in different individuals.

4. *PODOMYRMA BASALIS*. *P. fusco-ferruginea*; abdominis basi pallide testacea; femoribus medio incrassatis, basi tenuibus.

Worker. Length 3 lines. Obscurely ferruginous, the scape of the antennæ, the base of the femora and the tibiæ pale ferruginous; the base of the abdomen pale testaceous; the head and thorax with deep coarse longitudinal furrows; the flagellum blackish-brown towards its apex, with the extreme tip pale. Thorax: the anterior margin slightly rounded with the lateral angles very acute; the femora very thickly incrassate in the middle; the apex of the tibiæ ferruginous. Abdomen smooth and shining; the basal half pale testaceous, the apical half and the following segments black; the nodes of the petiole rugose; the first node elongate, with a short acute tooth at the base above, and a blunt one beneath.

Hab. Aru.

Gen. *MYRMICA*, Latr.

1. *MYRMICA PARALLELA*. *M. rufo-fulva*; antennis pedibusque pallide testaceis; abdomine fusco-ferrugineo; capite thoraceque longitudinaliter striatis.

Worker. Length 1 line. Head and thorax ferruginous and longitudinally and evenly striated; antennæ and legs pale rufo-testaceous. Thorax margined at the sides, the disk slightly convex, the anterior margin transverse, the lateral angles acute; the metathorax with two short spines; abdomen dark fusco-ferruginous, the nodes of the petiole subrugose; club of the antennæ 3-jointed.

Hab. Aru.

2. *MYRMICA SCABROSA*. *M. nigra*; capite thoraceque scabrosis, metathorace bispinoso, abdomine ovato lævi.

Worker. Length 1 line. Black; the head, thorax, and nodes of the petiole roughened; the mandibles, flagellum and tarsi rufo-testaceous; the lateral angles of the prothorax acute, the sides narrowed slightly to the base of the metathorax, the spines on the latter acute; nodes of the petiole globose. Abdomen ovate, smooth and shining; club of the antennæ 3-jointed.

Hab. Aru.

3. *MYRMICA THORACICA*. *M. capite abdomineque nigris; antennis, mandibulis thorace pedibusque flavis.*

Worker. Length $\frac{3}{4}$ line. Head and abdomen jet-black; the antennæ, thorax, and legs of a clear honey-yellow; the mandibles of a more obscure yellow; the anterior margin of the thorax transverse, the lateral angles acute, narrowed from thence to the base of the mesothorax, the disk anteriorly slightly convex; the metathorax armed with two acute spines. Abdomen nearly round, and very smooth and shining; the first node of the petiole vertical anteriorly, and gradually rounded behind, the second node transverse, its anterior margin straight, the angles rounded, the sides narrowed towards the abdomen; the club of the antennæ 3-jointed.

Hab. Aru.

The singular form of the thorax of this species, as well as the construction of the nodes of the petiole, appear to indicate an uncharacterized division of the genus *Myrmica*.

4. *MYRMICA SUSPICIOSA*. *M. rufo-testacea, lævis, tota nitidissima nuda; mandibulis, antennis, pedum articulationibus tarsisque pallescentibus; metathoracis spinis minutissimis.*

Worker. Length 1 line. Rufo-testaceous and very smooth and shining; the antennæ as long as the insect; the flagellum, mandibles, tarsi, and articulations of the legs pale testaceous. The thorax narrowed anteriorly into a short neck, behind which it is dilated, the sides being rounded, the meso- and metathorax narrower and of nearly equal width, the spines of the metathorax minute and slender. The first node of the petiole somewhat wedge-shaped, the second globose, the abdomen very smooth and shining; club of the antennæ 3-jointed.

Hab. Aru.

I can detect no specific difference between this and *Myrmica lævigata*, taken by myself in the neighbourhood of London; but it is not uncommonly met with in hothouses, near to which I captured my specimen. I believe *M. lævigata* is identical with *Ecophthora pusilla*, the House-Ant of Madeira.

5. *MYRMICA MELLEÆ*. *M. capite thoraceque flavis; abdomine pallidè fusco.*

Worker. Length $1\frac{1}{2}$ line. Head, antennæ, thorax, and legs honey-yellow and very smooth and shining; thorax strangulated at the base of the metathorax, which is not spined; the first node of the abdomen is oblique anteriorly, and vertical behind, the second node subglobose. Abdomen: the base honey-yellow, the apical margin of the first segment, and the following segments entirely, pale fuscous; the club of the antennæ 2-jointed.

Hab. Aru.

6. *MYRMICA CARINATA*. *M. obscurè fusco-ferruginea; thorace rufo-*

fulvo; capite thoraceque carinis irregularibus; metathorace spinis duabus longis armato.

Worker. Length $1\frac{1}{4}$ lines. Head and abdomen black, with more or less of an obscure ferruginous tinge, particularly at the vertex and base of the abdomen; the thorax and nodes of the petiole ferruginous; the legs rufo-piceous, with the tarsi and articulations ferruginous, the antennæ and mandibles ferruginous; the head and thorax with irregular distant longitudinal carinæ; the sides of the thorax rugose; the spines on the metathorax long and acute; the abdomen very smooth and shining; the club of the antennæ 3-jointed.

Hab. Aru.

Gen. CREMATOGASTER, *Lund.*

1. *Crematogaster obscura*, *Smith, Cat. Hym. Ins., Journ. Proc. Linn. Soc.* ii. 76. 4 ♂.

Hab. Aru; Borneo.

2. *CREMATOGASTER ELEGANS.* *C. pallidè rufo-testaceus*; abdomine nigerrimo nitido; thorace bispinoso.

Worker. Length $\frac{3}{4}$ line. Entirely pale rufo-testaceous, excepting the eyes and abdomen which are jet black; the nodes of the petiole pale, smooth, and shining. Head about the same width as the abdomen. The lateral angles of the anterior margin of the prothorax acute, the metathorax armed with two long acute spines. Abdomen heart-shaped, its apex acute.

Hab. Aru.

3. *CREMATOGASTER INSULARIS.* *C. niger, lævis et nitidus*; antennis tarsisque pallidè testaceis; thorace spinis duabus acutis armato.

Worker. Length $1\frac{1}{4}$ line. Black, smooth and shining; the vertex, thorax and nodes of the peduncle with an obscure ferruginous tinge; the antennæ, tarsi, and articulations of the legs pale rufo-testaceous; the spines which arm the metathorax stout, elongate, and acute, with their apex pale testaceous. Abdomen heart-shaped and very acute at the apex.

Hab. Aru.

Gen. SOLENOPSIS, *Westw.*

1. *SOLENOPSIS CEPHALOTES.* *S. pallidè ferruginea*; capite maximè in medio sulcato, abdomine apice fusco.

Worker major. Length $2\frac{1}{4}$ lines. Pale ferruginous, with the anterior part of the face darker, the mandibles incrassate and very dark fusco-ferruginous; head very large and divided by a deep longitudinal channel, emarginate behind, nearly quadrate; the eyes small and placed forwards on the sides of the head. The metathorax truncate, not spined. Abdomen ovate, truncate at the base, its apex fuscous; the first node of the petiole compressed, its margin rounded above,

the second node incrassate and subglobose; club of the antennæ 2-jointed.

Worker minor. Length $1\frac{1}{2}$ line. Of the same colour as the *worker major*, but with the head of the ordinary size and slightly narrowed behind, the mandibles of the same colour as the head; the legs and antennæ longer, as well as the petiole of the abdomen; the body is very smooth and shining, the club of the antennæ 2-jointed.

Hab. Aru.

Subfam. CRYPTOCERIDÆ, *Smith.*

Gen. MERANOPLUS, *Smith.*

1. *MERANOPLUS SPINOSUS.* *M. castaneo-rufus*; abdomine nigro, thorace sexspinoso; abdomine ovato.

Worker. Length $1\frac{1}{2}$ line. Head and thorax rugose; the antennæ and tarsi rufo-testaceous; the eyes rather prominent, the groove above them at the sides of the head extending backwards to the vertex. Thorax: the anterior margin curved forwards, the lateral angles produced into a bifurcate process on each side, behind the processes, slightly narrowed to the base of a long curved tooth; the posterior margin emarginate with a long sharp spine at each angle of the emargination; the node of the petiole globose. Abdomen black, smooth and shining.

Hab. Aru.

Fam. MUTILLIDÆ, *Leach.*

Gen. MUTILLA, *Linn.*

1. *Mutilla Sibylla, Smith, Proc. Linn. Soc. ii. 86. 11 ♀.*

Hab. Aru; Borneo; Celebes.

2. *MUTILLA MANIFESTA.* *M. capite abdomineque nigris, thorace sanguineo-rubro, maris alis nigro-fuscis.*

Female. Length $4\frac{1}{2}$ lines. Head black and rugose. The thorax blood-red and coarsely rugose, its anterior margin widest and straight, the sides gradually narrowed to the apex in a slight curve; the lateral margins have two teeth not wide apart. Abdomen black, rugose, and slightly shining, with black pubescence above; on the under surface it is glittering silvery-white; the legs and sides of the thorax have a similar pubescence.

Male. The same size as the female, and the same colour; the eyes notched. The thorax oblong-quadrate, the posterior lateral angles acute; the tegulæ large and red; the wings dark brown, with their extreme base hyaline. Abdomen shining black, the first and second segments strongly punctured, the rest much more finely and not very closely so.

Hab. Aru.

3. *MUTILLA CARINATA.* *M. capite thoraceque metallico-purpureis*

viridi tinctis, pedibus ferrugineis, abdomine nigro, basi pallido fasciatâ, segmento secundo ad apicem fasciâ bilobatâ ornato.

Female. Length $4\frac{1}{2}$ lines. The head and thorax of a metallic purple tint with shades of green and copper; the scape of the antennæ, the mandibles, palpi, and legs ferruginous; the head and thorax closely and strongly punctured. The abdomen velvety black; the base truncate, the truncation smooth and shining; its margin carinate; the upper surface of the basal segment yellowish-white, a broad bilobed fascia of the same colour at the apical margin of the second segment; the apex ferruginous. *Male.* The head and thorax metallic green, strongly and closely punctured; abdomen black and shining, much more finely punctured than the thorax; wings light brown, with their base and extreme apex hyaline; the legs ferruginous.

Hab. Aru.

4. *MUTILLA NIGRA.* *M.* nigra et punctata, abdomine lævi et nitido, delicatulè punctato, alis fuscis, basi hyalinis.

Male. Length $6\frac{1}{2}$ lines. Black; head and thorax closely and strongly punctured; the eyes slightly notched; the face with silvery-white pubescence, the mandibles shining, the palpi black. Thorax: the metathorax densely clothed with yellowish-white pubescence; the legs with glittering white hairs, the calcaria white; wings brown with their base hyaline. Abdomen smooth and shining, delicately and sparingly punctured, with a few silvery hairs at the sides.

Hab. Aru.

5. *MUTILLA EXILIS.* *M.* nigra et punctata; abdomine lævigato, nitido; alis subhyalinis; facie et metathorace pube argentatâ vestitis.

Male. Length $6\frac{1}{2}$ lines. Black; head and thorax strongly punctured; the eyes emarginate, the face with glittering silvery-white pubescence, the cheek thinly sprinkled with silvery hairs; the palpi testaceous. Thorax: the metathorax densely clothed with silvery pubescence, beneath, at the sides, and also the legs with scattered silvery hairs, the calcaria white; the tegulæ shining; the wings subhyaline with the nervures dark fuscous. Abdomen shining black, smooth, and very delicately and sparingly punctured, the apical margins of the segments very thinly fringed with glittering silvery hairs.

Hab. Aru.

Tribe FOSSORES, Latr.

Fam. SCOLIADÆ, Leach.

Gen. MYZINE.

1. *MYZINE TENUICORNIS.* *M.* nigra, alis hyalinis, abdomine nitido flavoqve variegato.

Male. Length 7 lines. Black; the head and thorax very closely punctured, thinly clothed with griseous pubescence, that on the face, thorax

beneath, and on the coxæ most dense and glittering; antennæ more slender than is usual in this genus, and tapering to their apex, the joints slightly subarcuate; the mandibles bidentate at their apex and with a yellow spot at their base. Thorax: the posterior margin of the prothorax, a spot beneath the wings, the tegulæ, and the post-scutellum yellow; the anterior and intermediate tibiæ ferruginous and more or less dusky above, the posterior pair ferruginous beneath. Abdomen shining, the margins of the segments deeply depressed; a small ovate spot on each side of the first segment, the second and three following segments with a narrow stripe on each side in the middle, yellow; the yellow markings obscure; the apical segment coarsely rugose; beneath, the segments are closely and strongly punctured.

Hab. Aru.

Gen. SCOLIA, *Fabr.*

Division I. The anterior wings with two submarginal cells and two recurrent nervures.

1. *Scolia grossa*, *Burm. Abh. Nat. Ges. Halle*, i. p. 23. (*Tiphia grossa*, *Fabr. Syst. Piez.* p. 232. 4.)

Hab. Aru; Java.

The specimens of this species received from Aru are only 9 lines in length; I have examined others from Celebes, Borneo, India, and Java, showing every difference between 9 lines and 18 lines.

Division II. Anterior wings with two submarginal cells and one recurrent nervure.

2. *SCOLIA NITIDA*. *S. nitida*, *aterrima*; *alis æneo et violaceo splendidis micantibus*.

Female. Length 11 lines. Shining jet-black, the abdomen with prismatic tints. The flagellum fusco-ferruginous beneath, the mandibles ferruginous at their apex; the wings dark brown with a splendid lustre of coppery and golden tints mixed with shades of violet. The head with a few punctures behind the ocelli; the thorax with scattered punctures; the metathorax finely but not closely punctured; the disk of the mesothorax impunctate; the abdomen with fine scattered punctures; the apical segment opaque, rugose, and with its apical margin pale testaceous; the abdomen beneath with strong distant punctures.

Hab. Aru.

3. *SCOLIA FULGIDIPENNIS*. *S. nitida*, *nigra*; *abdomine prismático, alis fuscis viride et violaceo micantibus*.

Female. Length 12-13 lines. Jet-black, shining; head very smooth, the hinder margin of the vertex finely punctured, the face with a few fine scattered punctures; the flagellum obscurely rufo-fusous. Thorax finely punctured, the disk of the mesothorax impunctate; wings dark brown with a splendid green iridescence, with violet tints to-

wards their base; the legs thickly spinose and pubescent; the calcaria simple. Abdomen with scattered fine punctures; the apical segment densely clothed with black pubescence; beneath, with strong scattered punctures.

Male. Rather smaller than the female, much more closely punctured, and not so shining and smooth; the face with a transverse arched carina above the insertion of the antennæ, which enters the emargination of the eyes; the clypeus strongly punctured; in other respects resembling the female.

Hab. Aru.

This species belongs to Guérin's division *Liacos*, of which *S. dimidiata* is the type; the third discoidal cell is petiolated, the petiole entering the second submarginal about the middle.

4. *SCOLIA INSULARIS*. *S. nitida nigra*; abdomine prismatico, alis obscure fuscis cupreo submicantibus.

Male. Length 7-9 lines. Shining black; head punctured, the vertex most finely and distinctly so. Thorax punctured, the disk of the mesothorax impunctate, the punctures wide apart on the scutellum and metathorax; the wings dark brown with a coppery iridescence, which has a remarkable dimness as if breathed upon. The basal segment of the abdomen strongly and closely punctured; the following segments more finely and distantly punctured, particularly the second and third segments.

Hab. Key Island.

5. *SCOLIA QUADRICEPS*. *S. nitida nigra*; feminae capite magno subquadrato, alis fuscis cupreo iridescentibus.

Female. Length 6-8 lines. Black and shining; head subquadrate, smooth and shining, as wide as the thorax, with a few punctures at the sides of the face and between the antennæ. Thorax finely punctured, with the disk of the mesothorax impunctate; wings dark brown with a rich coppery iridescence. Abdomen with a fine prismatic lustre, closely and strongly punctured towards the apex and at the extreme base, the second segment and the middle of the third with only a few very fine scattered punctures.

Hab. Aru.

This species also belongs to the division *Liacos*; the petiolated cell is small and oblong-quadrate; the male exactly resembles the female, except that its head is smaller and narrower than the thorax; the abdomen is rather more strongly punctured.

Gen. *POMPILUS*, *Fabr.*

1. *POMPILUS DUBIUS*. *P. niger*, pilis mutabili-sericeis tectus; alis subhyalinis, apice nebuloso.

Female. Length $4\frac{1}{4}$ lines. Black and covered with a thin changeable silvery pile, which is most dense on the sides of the metathorax and base of the segments of the abdomen. The vertex emarginate behind, the eyes very large, their inner orbits emarginate, reaching high on

the sides of the head nearly to the margin of the vertex; the clypeus emarginate in front, the labrum produced. Thorax: the prothorax subelongate, narrowed anteriorly; the wings subhyaline, their apex clouded; the intermediate and posterior tibiae with a double row of spines; all the tarsi simple; the calcaria stout and elongate. Abdomen shining, with the margins of the segments slightly depressed.

Hab. Aru.

Subgen. *AGENIA*, *Schödté*.

1. *Agenia blanda*, *Guér. Voy. Coq. Zool.* pt. 2. ii. p. 260.

Hab. Celebes; India; Singapore; Malacca; Borneo; Key Island.

2. *AGENIA CALLISTO*. *A. nigra*, pilis sericeis vestita; facie thoraceque subtus pube argentato-alba dense vestitis; alis fasciis duabus angustis.

Female. Length 8 lines. Black; the face, clypeus, and cheeks with a dense silvery-white pile; the tips of the mandibles obscurely ferruginous, the palpi black. Thorax with a brilliant silvery-white pile on the sides, beneath, and on the coxae; the metathorax transversely rugose; the wings hyaline; the anterior pair with a narrow fuscous fascia at the apex of the externo-medial cell, and a second rather broader at the base of the marginal cell, which does not quite cross the wing; the apex of the wing fuscous. Abdomen petiolated, smooth and shining, with a beautiful glossy pile, which is most dense at the sides; the apical segment longitudinally subcarinated in the middle above.

Hab. Aru.

3. *AGENIA JUCUNDA*. *A. nigra* nigra; facie metathorace abdomineque pube sericea vestitis; antennis, pedibus, abdominisque marginibus apicalibus ferrugineis; alis hyalinis.

Female. Length $5\frac{1}{2}$ lines. Black; head, pro- and mesothorax, as well as the scutellum, glassy-smooth and shining; the face covered with silvery-white pile; the antennae, tips of the mandibles, and the legs ferruginous; the palpi elongate and pale rufo-testaceous. Thorax: the wings hyaline and iridescent, the nervures very slender and pale rufo-testaceous, the stigma fuscous; the metathorax rounded behind, transversely rugose, and covered with silvery-white pile. Abdomen petiolated; the apical margins of the second and following segments ferruginous, the apical segment entirely so; the ferruginous band on each segment produced in the middle into an angular shape; on the abdomen beneath they are similarly produced; the basal segment entirely ferruginous, with a black spot on each side.

Hab. Aru.

4. *AGENIA ALTHEA*. *A. nigra*; facie pube argentato-alba vestita, thorace abdomineque sericeo pubescentibus; alis hyalinis, venis nigris.

Female. Length 5 lines. Black; the face silvery; the anterior margin of the clypeus rounded and narrowly smooth and shining; tips of the mandibles ferruginous; the mandibles elongate and pale rufo-testaceous. Thorax: the metathorax finely transversely rugose, the sides with bright silvery-white pubescence; the coxæ, the thorax beneath and on the sides, with fine silky sericeous pile; the anterior tibiæ and tarsi, and all the femora at their apex beneath, ferruginous; wings hyaline and iridescent, nervures black; the outer margin of the tegulæ testaceous. Abdomen shining, and with a fine silvery sericeous pile; the apical margins of the segments narrowly rufo-piceous; the terminal segment with an elongate, smooth, shining space, which extends to the apex, which is testaceous.

Hab. Aru.

5. *AGENIA ALCYONE.* *A. nigra*, pilis sericeis cinereis vestita; antennis pedibusque ferrugineis, alis hyalinis; abdomine petiolato; marginibus apicalibus segmentorum flavis.

Male. Length 7 lines. Black; the antennæ, tips of the mandibles, and the legs ferruginous; the scape in front, a narrow line on the inner orbit of the eyes, and the anterior portion of the clypeus yellow; the antennæ fuscous above towards their base. Thorax: the femora beneath towards their base, the trochanters and coxæ, except their apex, black; the apical joints of the intermediate and posterior tarsi fuscous; wings hyaline, the nervures fusco-ferruginous, the tegulæ reddish-yellow. Abdomen petiolated; the apical margins of the segments with reddish-yellow fasciæ; beneath, the margins of the segments are rufo-piceous, not fasciated.

Hab. Aru.

6. *AGENIA AMALTHEA.* *A. nigra*, pilis tenuibus cinereis sericeis vestita; antennis anticè pedibusque anticis et intermediis anticè ferrugineis; abdomine petiolato; alis hyalinis bifasciatis.

Female. Length 6 lines. Black; the face densely covered with silvery pile; the antennæ in front, the anterior margin of the clypeus and the tips of the mandibles ferruginous; palpi elongate and pale rufo-testaceous. Thorax: the posterior margin of the prothorax narrowly, the tegulæ, the anterior and intermediate femora in front, the posterior pair towards their apex beneath, the anterior tibiæ and tarsi, the intermediate and posterior tibiæ more or less beneath, and their tarsi, ferruginous; the tarsi sometimes dusky above; the wings hyaline, a narrow fuscous fascia at the apex of the externo-medial cell, and a broad one crossing at, and being the width of, the second and third submarginal cells; tips of the wings milky-white; the metathorax rounded posteriorly, transversely finely rugose and densely covered with short silvery-white pubescence at the sides and apex. Abdomen petiolated, smooth and shining, with the apex and the margins of the segments narrowly rufo-piceous.

Hab. Aru.

Gen. PRIOCNEMIS, *Schiödde*.

1. PRIOCNEMIS PULCHERRIMUS. *P. lætè ruber*; alis flavo-hyalinis, apice latè fusco, abdominis lateribus nigris.

Female. Length $7\frac{1}{2}$ lines. Bright red; the anterior margin of the clypeus with a minute tooth in the centre; the tips of the mandibles fuscous. The metathorax slightly striated transversely, and with a central as well as a lateral longitudinal groove; the wings flavo-hyaline, their apex with a fuscous cloud, which commences at the base of the first discoidal cell, the extreme tips pale; the tibiæ and tarsi with short slender spines; the extreme apex of the joints of the posterior tarsi black. Abdomen: the short petiole of the basal segment, and the sides of the second, third, and fourth segments black, leaving a red line down the middle of each; beneath, the second, third, and base of the fourth segments black.

Hab. Aru.

2. PRIOCNEMIS FERVIDUS. *P. capite, antennis, thorace pedibusque ferrugineis*; abdomine nigro; alis fuscis basi subhyalinis.

Female. Length 9 lines. Ferruginous, with the abdomen black; the anterior margin of the clypeus rounded. The metathorax transversely rugose; the pectus, and coxæ at their base within, black; wings brown, with a violet iridescence, their base rufo-hyaline; the intermediate and posterior tibiæ with a double row of spines, all the tarsi spinose. Abdomen shining black, with the extreme apex slightly ferruginous.

Hab. Aru.

Gen. MACROMERIS, *St.-Farg.*

1. MACROMERIS IRIDIPENNIS. *M. cæruleo-nigra*; abdomine iridescente, alis cæruleo-violaccoque splendide micantibus; pedibus muticis, simplicibus.

Female. Length 12 lines. Blue-black; abdomen with a changeable iridescent pile; head and thorax with a black velvety pubescence; the metathorax very finely rugose and opaque; the legs simple; the posterior tibiæ villose within; the wings very dark brown, with a splendid violet and blue iridescence.

Male. Very closely resembling the female, but rather smaller; the anterior and intermediate femora more incrassate, and all the femora with a simple row of teeth or serrations on their inferior margins.

Hab. Aru.

Although this species of *Macromeris* is very similar in colour to the *M. violacea* of St.-Fargeau, the femora are not so thick as in that species, not in fact much more so than in the female; and the row of teeth beneath is a strong specific character.

Gen. *SALIUS*, *Fabr.*

1. *SALIUS MALIGNUS*. *S. niger*, pube cinerea sericea vestitus; alis fuscis, albo fasciatis.

Female. Length 9 lines. Black, and covered with a fine thin ashy pile; the scape in front, and the anterior margin of the clypeus narrowly, obscure yellow; the mandibles ferruginous at their apex, which has a single notch; the palpi pale rufo-testaceous. Thorax: the prothorax with a slightly interrupted narrow fascia a little before its posterior margin, and the scutellum, yellow; the anterior femora broadly dilated, and, as well as the anterior tibiae, ferruginous within; the intermediate tibiae ferruginous at their apex in front, and the posterior pair with a yellowish-white spot at their base outside; the calcaria pale testaceous, the claws ferruginous, the anterior tarsi entirely so, but more or less obscure; the posterior tibiae slightly spinose; the anterior wings brown, with a white fascia crossing at the first discoidal cell, and a second at the apex of the third submarginal, the extreme base and the anterior margin of the externo-medial cell hyaline. Abdomen: the apical margins of the segments with a little bright silvery pile.

Hab. Aru.

Gen. *MYGNIMIA*, *Smith.*

1. *MYGNIMIA ASPASIA*. *M. caeruleo-nigra*; capite thoraceque pube holosericea vestitis; alis fulvo-hyalinis; abdomine pilis iridescentibus vestito.

Female. Length 14 lines. Black, with shades of blue in certain lights; the abdomen with bright tints of blue and violet, caused by fine iridescent changeable pile; the legs have a similar pile, very bright on the femora within; the head and thorax with a short black velvety pubescence; the wings flavo-hyaline; the nervures pale ferruginous; the extreme base of the wings blackish, their apical margins with a narrow fuscous border. The legs spinose; the posterior tibiae with a double row of strong serrations.

Gen. *SPHEX*, *Fabr.*

1. *SPHEX ARGENTATA*, *Dahlb. Hym. Eur. i. 25. 1.*

Hab. Aru; Celebes; Sumatra; India; Greece; Africa; East Florida.

2. *SPHEX SERICEA*, *Fabr. Syst. Piez. 211. 19.*

Hab. Aru; Malacca; Borneo; Java; Philippine Islands.

3. *SPHEX AURIFRONS*. *S. niger*; facie pube aurea vestita, alis flavo-hyalinis apice fuscis, abdomine pilis sericeo-aureis vestito.

Female. Black; the face densely clothed with golden pubescence, the head having a number of scattered long golden-yellow hairs. Thorax

thinly covered with long yellow pubescence, which is most dense at the sides of the metathorax; the tibiae, tarsi, and posterior femora ferruginous; the claw-joint of the tarsi black; the tibiae and tarsi with black spines; the wings fulvo-hyaline, their apex with a narrow fuscous border, the nervures ferruginous. Abdomen covered with a fine, thin, golden-reflecting pile; the apical margins of the segments rufo-testaceous, the testaceous margin produced in the middle into a triangular shape, most conspicuously so on the segments beneath.

Hab. Aru.

4. *SPHEX NITDIVENTRIS*. *S. niger*; abdomine nigro-cæruleo, lævigato, nitido; alis fuscis.

Female. Length 12 lines. Black; the face with silvery pubescence, and thinly covered with long black hairs; the clypeus with a central longitudinal carina at the base, which terminates at the middle, from whence to the anterior margin is a broad, smooth, shining space. Thorax shining and finely punctured; the metathorax opaque and covered with long, loose, black pubescence; the legs shining, the posterior tibiae with shining grey pile within; wings brown, darkest at their base. Abdomen blue, and very smooth and shining, oblong-ovate; the apical segment vertical.

Hab. Aru.

5. *SPHEX SEPICOLA*. *S. niger*; facie pube aureâ vestitâ; alis subhyalinis apice fuscis; abdomine nitido.

Female. Length 9 lines. Black; the face densely clothed with golden pubescence, the cheeks with iridescent pile, with a long, loose, scattered pale yellow pubescence on the head and thorax; the mandibles smooth, shining black. The disk of the thorax with an obscure chalybeous tint, shining and finely punctured; the metathorax opaque and finely rugose; the wings subhyaline, their apical margins fuscous, the nervures fusco-ferruginous. Abdomen with a slender subelongate petiole, and with a thin, silky, grey pile; the apical margins of the segments narrowly and obscurely rufo-piceous.

Male. Rather smaller than the female, more slender and more pubescent, the pubescence on the face paler.

Hab. Aru.

6. *SPHEX GRATIOSA*. *S. capite thoraceque nigris, abdomine cæruleo, alis fusco-hyalinis*.

Male. Length 10 lines. Head and thorax black; the face densely clothed with pale golden pubescence; the labrum and mandibles highly polished, very smooth and shining; a thin pale pubescence is scattered over the head, pro- and mesothorax, the latter obscurely chalybeous above, shining, and finely and closely punctured, with an abbreviated, deeply impressed line in the middle anteriorly; the posterior margin of the prothorax covered with shining silvery pubescence; the

metathorax opaque, and clothed with black pubescence; wings fusco-hyaline, the anterior pair darkest towards their base, the nervures dark fusco-ferruginous, nearly black. Abdomen smooth, shining dark blue; beneath, the margins of the segments have a bright, glittering, pale-golden pile.

Gen. PELOPÆUS, *Latr.*

1. PELOPÆUS LABORIOSUS. *P. niger*; scapo anticè, pedibus petio-loque rufescenti-flavis, alis hyalinis fulvo tinctis.

Female. Length 12 lines. Black, with black pubescence on the head and thorax; the face with a fine cinereous pile; the scape yellow in front; the mandibles smooth and shining. Thorax: the legs pale ferruginous, the posterior femora darkest; the coxæ, the anterior and intermediate trochanters, and base of the femora black; wings fulvo-hyaline, the nervures ferruginous; the metathorax obliquely striated. Abdomen slightly shining at the base, with the petiole reddish-yellow.

Hab. Aru.

Gen. LARRADA, *Smith.*

1. LARRADA MODESTA. *L. nigra*; abdomine pilis argentatis fasciato; alis hyalinis.

Female. Length $6\frac{1}{2}$ lines. Black; the face covered with silvery down; the mandibles smooth, shining, black, and fringed beneath with fulvous hairs, the cheeks silvery. Thorax slightly shining, closely and delicately punctured; the metathorax opaque and transversely striated; wings subhyaline, with a fuscous border at their apex, the nervures black. Abdomen slightly shining; the apical margins of the first, second, and third segments with fascia of silvery pile, which is very brilliant in certain lights.

Male closely resembles the female, but has an additional fascia on the abdomen.

Hab. Aru.

Gen. LARRA, *Fabr.*

1. LARRA SIMILLIMA. *L. nigra*, pulchre prismatica, maculis fascisque variis flavis ornata.

Female. Length $6\frac{1}{2}$ lines. Black; the abdomen with tints of blue violet; the thorax slightly prismatic; the labrum, clypeus, an angular scape above, an abbreviated line on the inner orbits of the eyes, the scape in front, and the antennæ beneath, yellow; the cheeks with a silvery reflexion. The thorax beneath, and the metathorax, with a shining white silvery pile; the anterior and intermediate femora and tibiæ beneath yellow; the tarsi pale ferruginous, and more or less fuscous above; wings subhyaline, the nervures fuscous; a spot on the lateral posterior angles of the metathorax, two ovate spots on the scutellum, and a line on the postscutellum yellow. Abdomen: the basal segment with a broadly interrupted fascia a little before its